	Application No.	Applicant(s)
Notice of Allowability	10/063,958	KOSEKI ET AL.
	Examiner	Art Unit	
	Chuck O. Kendall	2192	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to _07/09/07_.

2. ☒ The allowed claim(s) is/are _1-17_.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None of the:

        1. ☐ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

        3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
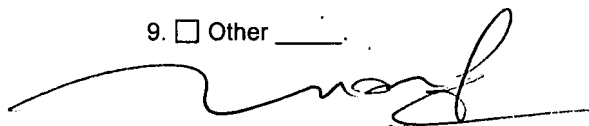
    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

        1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of
    Paper No./Mail Date _____ .

    Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO/SB/08),
    Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application

6. ☒ Interview Summary (PTO-413),
    Paper No./Mail Date _09/14/07_ .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

TUAN DAM
SUPERVISORY PATENT EXAMINER

Reasons for Allowance

Examiners Amendment

1.   An examiner's amendment to the record appears below. Should the changes

and/or additions be unacceptable to applicant, an amendment may be filed as provided

by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be

submitted no later than the payment of the issue fee.

A call was placed to Attorney of record Stanley D. Ference 33,879 to correct

potential 101 issues. Authorization was given on 09/14/07.

The application has been amended as follows:

IN THE CLAIMS

2.   Please amend claims 5, 7, 8, 10, and 11 as attached herein see pages 6 – 9.

Reasons for Allowance

3.   Examiner has reviewed and considered Applicant's comments as indicated on

pages 10 – 11 of Applicants response dated (07/09/2007) as well as current

amendments above and after further review of Applicant's response and per Applicants

arguments, Examiner is hereby placing claims 1 – 17 in condition for allowance.

The following is an Examiner's statement of reasons for allowance.

The prior art of record does not teach or fairly suggest at least:

A method, comprising:

"...performing mapping between said logical registers and physical registers, so that said physical registers that are live at a procedure call in said program to be compiled are allocated from the bottom of the register stack", as best illustrated by Figure 5, and in such a manner as recited in independent claims 1, 5, 7, 12 and 15, and as pointed out in Applicant's response (07/09/07) pages 10 – 11.

"...upon calling of the procedure, so long as there is a vacancy in operation resources, copying said registers residing in the register stack, to free registers located at the bottom of said register stack..." as best illustrated by Figure 5, and in such a manner as recited in independent claims 4,10,13, and 16, and as pointed out in Applicant's response (07/09/07) pages 10 – 11.

"...wherein said register allocator allocates logical registers for instructions in said program to be compiled, and allocates, to physical registers, said logical registers that are allocated to said instructions of said program, so that said physical registers that are live at a procedure call in said program to be compiled are allocated from the bottom of the register stack..." as best illustrated by Figure 5, and in such a manner as recited in independent claim 8 and as pointed out in Applicant's response (07/09/07) pages 10 – 11.

"...reallocating registers that are allocated for the execution of said predetermined procedure and that are live when said different procedure is called..." as best illustrated by Figure 5, and in such a manner as recited in independent claims 11, 14 and 17 and as pointed out in Applicant's response (07/09/07) pages 10 – 11.
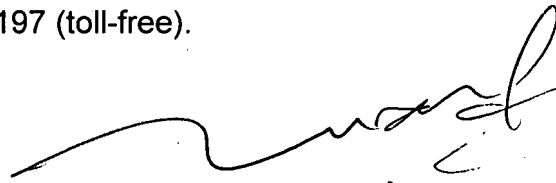
Therefore, claims 1 – 17 are in condition for allowance.

4.   Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chuck Kendall whose telephone number is 571-272-3698. The examiner can normally be reached on 10:00 am - 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Dam can be reached on 571-272-3695. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

TUAN DAM
SUPERVISORY PATENT EXAMINER

5. **(Currently Amended)** A method, for employing a stack register when a processor with a register stack executes a program, comprising the steps of:

when a different procedure is called in a predetermined procedure, said predetermined procedure called before the different procedure, reallocating registers that are allocated for the execution of said predetermined procedure and are live when said different procedure is called, and calling said different procedure; and

upon the return from said different procedure, restoring the register image to the state immediately before the reallocation;

wherein said reallocating registers includes the steps of

reallocating logical registers for instructions in said program, and

performing mapping between said logical registers and physical registers, so that said physical registers that are live at a procedure call in said predetermined procedure are allocated from the bottom of the register stack.

7. **(Currently Amended)** A method, for employing a stack register when a program is executed by a processor with a register stack, comprising the steps of:

each time a procedure is called, packing and allocating existing logical registers;

performing said procedure, and restoring the register image to the state before packing;

wherein said step of allocating existing logical registers includes the steps of

allocating existing logical registers for instructions in said program, and

performing mapping between said existing logical registers and physical registers, so that said physical registers that are live at the procedure call are allocated from the bottom of the register stack.

8. **(Currently Amended)** An apparatus for converting into machine language code the source code of a program written in a program language, the apparatus comprising:

a register allocator, for allocating registers for instructions in said program to be compiled; and

a code generator, for generating object code based on the register allocation process performed by said register allocator,

wherein said register allocator allocates logical registers for instructions in said program to be compiled, and allocates, to physical registers, said logical registers that are allocated to said instructions of said program, so that said physical registers that are live at a procedure call in said program to be compiled are allocated from the bottom of the register stack;

wherein the apparatus utilizes a processor to converting into machine language code the source code of a program written in a program language.

10. **(Currently Amended)** An apparatus for converting into machine language code the source code of a program written in a program language, the apparatus comprising:

a register allocator, for allocating registers for instructions in said program to be compiled; and

a code generator, for generating object code based on the register allocation process performed by said register allocator,

wherein said code generator generates code while confirming that registers are allocated for predetermined instructions, and

wherein, upon a procedure being called, said code generator, so long as there is a vacancy in operation resources, copies said registers residing in a register stack, to free registers that are located at the bottom of said register stack;

wherein the apparatus utilizes a processor to converting into machine language code the source code of a program written in a program language.

11. **(Currently Amended)** A computer for converting source code into machine language code, the computer comprising:

input means, for entering source code of a program; and

a compiler, for compiling said source code and converting the compiled code into machine language code,

wherein, before a different procedure is called in a predetermined procedure of a program to be compiled, said compiler generates code for reallocating registers that are allocated for the execution of said predetermined procedure and that are live when said different procedure is called, and generates code, for restoring the register image, upon the return from said different procedure, to the state immediately before the reallocation.